MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

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Missouri: Release Detection for Underground Storage Tanks and Piping: Straight Talk On Tanks

Missouri Department of Natural Resources' Publication
Adapted from EPA Guidance

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This booklet is based on one U.S. Environmental Protection Agency (EPA) wrote for owners and operators of underground storage tanks (USTs).

This booklet describes the 2017 Missouri state UST regulations, which were promulgated to incorporate the 2015 revised *federal* UST regulations.

Free Publications About UST Requirements

Download or read EPA's version of *Release Detection for Underground Storage Tanks and Piping: Straight Talk On Tanks* on EPA's UST webpage at epa.gov/ust. Order printed copies of many, but not all, of their documents from the National Service Center for Environmental Publications (NSCEP), EPA's publication distributor: write to NSCEP, Box 42419, Cincinnati, OH 45242; call NSCEP's toll-free number 800-490-9198; or fax your order to NSCEP 301-604-3408.

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Contents

Disclaimer

This document provides information about the 2017 Missouri UST system requirements. The document is not a substitute for the state or federal regulations nor is it a regulation itself — it does not impose legally binding requirements.

For regulatory requirements regarding UST systems, refer to the state regulations governing UST systems (10 CSR 26).

Do You Have Questions About Release Detection?

As an owner or operator of USTs storing petroleum:

- Do you understand the basic release detection requirements for USTs?
- Do you need help choosing the best release detection method for your USTs?

These are important questions, because your UST and its piping must have release detection in order to comply with state law and regulations.

This booklet begins with an overview of the state regulatory requirements for release detection.

Throughout this document, bold type and orange updated boxes indicate new requirements in the 2017 UST regulation.

Each following section focuses on one release detection method for tanks or the requirements for piping. You will find answers in this booklet to many basic questions about how release detection methods work and which methods are best for your UST site.

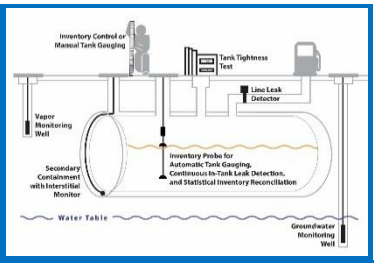
For an overview of all the Missouri UST requirements, see the department's *Musts for USTs*. You can download a copy at: dnr.mo.gov/env/hwp/docs/MissouriMustsforUSTs.pdf.

Why Is Release Detection Important?

As of September 2015, over 528,000 UST releases were confirmed nationwide since the UST program was implemented. At sites without release detection, contamination can spread undetected, requiring difficult and costly cleanups.

If you have effective release detection, you can respond quickly to signs of releases. You can minimize the extent of or eliminate potential for environmental damage and the threat to human health and safety. Early action also protects you from high costs that can result from cleaning up extensive releases and responding to third-party liability claims.

An Overview Of Release Detection Requirements



All state regulated USTs must have a release detection method, or combination of methods, that both:

- Can detect a release from any portion of the tank and the connected piping that routinely contains product
- Are installed and calibrated according to the manufacturer's instructions

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Tanks and piping installed or replaced on or after July 1, 2017, must be secondarily contained and use interstitial monitoring, except for suction piping that meets requirements discussed on pages 30-31.

All UST owners and operators must monitor their tanks and piping at least once every 30 days. This booklet may use the terms monthly or month and annually or annual. These terms mean at least once every 30 days and not to exceed 365 days, respectively.

For tanks installed before July 1, 2017, you can use any of these release detection methods:

- Secondary containment with interstitial monitoring
- Automatic tank gauging (ATG) systems (performing in-tank static tests)
- Continuous in-tank leak detection
- Statistical inventory reconciliation
- Tank tightness testing with inventory control
- Manual tank gauging
- Groundwater monitoring, but only for a limited time
- Vapor monitoring, but only for a limited time
- Other methods meeting performance standards or approved by the department

For underground piping installed before July 1, 2017, you may use any of the release detection methods listed above that are appropriate for piping or conduct periodic line tightness testing. See pages 30-33 for piping release detection requirements.

All pressurized underground piping connected to your USTs must also have automatic line leak detectors.

For Owners of Field-constructed Tanks or Airport Hydrant Systems

The 2015 UST regulation removes the deferral for field-constructed tanks and airport hydrant systems, making them subject to the UST requirements. These systems are not covered in this booklet due to their uniqueness. For information on the requirements for field-constructed tanks and airport hydrant systems, see EPA's website at: epa.gov/ust/field-constructed-tanks-and-airport-hydrant-systems-2015-requirements.

Release detection means determining whether a release of a regulated substance has occurred from the UST system into the environment or a leak has occurred into the interstitial space between the UST system and its secondary barrier or secondary containment around it.

UST systems that store fuel solely for use by emergency power generators must meet all of the release detection requirements noted on page 5, except that pressurized double-walled piping with containment sumps may use sump sensors in lieu of an automatic line leak detector.

UPDATED

To make sure your release detection equipment is working properly, you must begin doing the following by Jan. 1, 2020:

- **Test your release detection equipment annually**
- **Conduct walkthrough inspections every 30 days to visually check your release detection equipment and maintain applicable records of those checks**
- **Conduct annual walkthrough inspections to visually check containment sumps and hand-held release detection equipment, such as tank gauge sticks and groundwater bailers**

A leak is product leaving the primary portions of the UST system, including regulated substances entering into the interstitial space. A release is a leak that reaches the environment.

These terms allow continued use of the term "release detection" as it applies to both releases and leaks. More importantly, the 2017 secondary containment with interstitial monitoring requirement makes it necessary to clarify how the terms release and leak are used, because product escaping the primary containment may not necessarily reach the environment.

UPDATED

Releases and leaks have different investigation and reporting requirements. For information on addressing suspected releases, see the department's *Missouri Musts for USTs* at: dnr.mo.gov/env/hwp/docs/MissouriMustsforUSTs.pdf.

Look for Proof That Performance Requirements Are Met

The federal and state UST regulation requires that your release detection equipment meet specific performance requirements. Release detection equipment and methods (other than inventory control) must be evaluated by an independent third party. The evaluation shows that a release detection system can work as designed. Evaluations follow recommended evaluation protocols and testing and often take place at a testing facility. EPA developed evaluation protocols for all release detection methods.

Once every 30 days you must document the monthly "walkthrough" inspection. During the walkthrough, the release detection system must be checked. Everything must be functioning properly and a current test must be on file.

Release means any spilling, leaking, emitting, discharging, escaping, leaching or disposing from an UST into groundwater, surface water or subsurface soil.

You must use an approved release detection method that is listed through the NWGLDE. Each listing includes the criteria and limitations for a "valid" test. For more information, please visit their website at: nwglde.org

The National Work Group on Leak Detection Evaluations (NWGLDE) – an independent group – maintains a list of release detection equipment whose third-party-conducted documentation has been reviewed by the group. The list contains a detailed summary of specifications for over 390 release detection systems. All release detection methods (other than inventory control) must be conducted in accordance with manufacturer's instructions, certifications and the NWGLDE listing. For example, if a tank tightness test was NWGLDE-listed and the listing indicates tests must have a test time of two hours or more, then your UST must be tested for at least two hours or it would fail to meet the release detection requirements. See NWGLDE's list at nwglde.org.

Keep Release Detection Records

For the primary release detection method(s) you use, you must keep these written records:

- Proof that performance claims are met (the NWGLDE listing is sufficient). Retain these records for five years from the date of installation.
- Results of any sampling, testing or monitoring. Retain these results for one year. Retain tank tightness test results until the next test is conducted.
- All calibration, maintenance and repair of release detection equipment permanently located on-site. Retain records for one year after servicing work is completed.
- Schedules of required calibration and maintenance provided by equipment manufacturers. Retain the schedules for five years from the date of installation.
- UPDATED **Other records may be required and are discussed, as applicable, for individual release detection methods.**

Keep Records Demonstrating Compatibility

UPDATED **The 2017 UST regulation includes additional requirements to help owners and operators demonstrate that each UST system is compatible with certain regulated substances before storing them. If you store regulated substances containing greater than 10 percent ethanol or greater than 20 percent biodiesel, or any other regulated substance, you must keep records demonstrating compatibility of the UST system, including release detection equipment, for as long as the UST system stores the regulated substance. For more information on compatibility requirements, see EPA's *UST System Compatibility with Biofuels* at: epa.gov/ust/ust-system-compatibility-biofuels.**

Perform release detection according to documented procedures.

Retain release detection records for 12 months.

Make sure your UST system is compatible with the substance it stores.

Make sure your release detection system functions properly for the product stored.

Responding To Alarms and Other Suspected Releases

Alarms associated with release detection monitoring may indicate a release has occurred. An alarm incident does not necessarily have to be reported. In the event of an alarm, you must investigate, determine and correct the source of the alarm. Suspected releases must be reported to the department within 24 hours, unless you can determine that the alarm was caused by defective equipment.

An investigation of an alarm may include initiating a new test through your electronic monitoring system. If the new test passes and there are no other signs of a release, your investigation may be concluded. Please note, though, that repeat alarms may be a sign of a suspected release and should be further investigated. It may simply be a problem with your electronic system that a certified technician may repair. But, it could also be an indication of a leak or problem. Many methods, like an ATG, only test the portion of the tank that contains fuel. So, repeat alarms, especially associated with higher product levels, may be an indication of a failure or breach higher in the tank that is only detected when the product level is higher. Repeat alarms should never be ignored.

If you have tank pit observation wells, it is recommended that you check those wells when investigating a suspected release or system alarm. Finding product in a well could be an indication that the alarm is associated with an actual release, not simply a system error.

To report a release to the environment, please call the department's Environmental Emergency Response 24-hour spill line at: 573-634-2436

Secondary Containment With Interstitial Monitoring

Secondary containment uses a barrier, an outer wall or a liner around the UST or piping to provide secondary containment.

UPDATED

Tanks and piping installed or replaced on or after July 1, 2017, must be double-walled with containment sumps and use interstitial monitoring. This applies to UST systems containing petroleum or hazardous substances.

Will You Be In Compliance?

When installed and operated according to the manufacturer's specifications, double-walled tanks with interstitial monitoring meet the release detection requirements for USTs. You must test for a release at least once every 30 days. Double-walled piping open to leak-tight containment sumps with interstitial monitoring can also be used to detect leaks from piping. See release detection for piping requirements on pages 30-33.

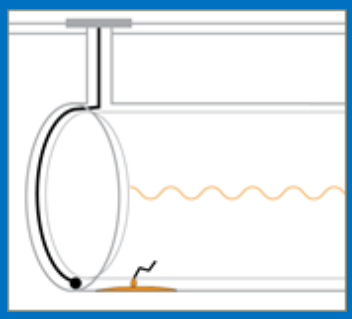
How Does the Release Detection Method Work?

The outer tank wall provides a barrier between the inner tank and the environment. The outer wall holds the leak between the tank and the outer wall so that the leak is detected. The double-walled tank is shaped so that a leak will be directed toward the interstitial monitor.

Monitors are used to check the area between the tank walls for leaks and alert the operator if a leak is suspected.

Some monitors indicate the physical presence of the leaked product. Other monitors check for a change in condition that indicates a hole in the tank, such as a loss of vacuum or pressure, or a change in the level of a monitoring liquid, such as a brine or glycol solution, between the walls of a double-walled tank.

For new systems installed on or after July 1, 2017, the interstitial monitoring system for petroleum tanks must be electronic and generate a report.



Secondary containment with interstitial monitoring

Replaced means:

For tanks **– to remove a tank and install another tank.**

For piping **– to remove 50 percent or more of piping and install other piping, excluding connectors, connected to a single tank. For tanks with multiple piping runs, this definition applies independently to each piping run.**

What Are the Regulatory Requirements?

You must check for a release at least once every 30 days.

A double-walled system must be able to detect a leak through the inner wall or outer wall.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly.

For hand held non-electronic equipment (including measuring sticks):

- **Check for operability and serviceability**
- **Keep walkthrough inspection records for one year**

For other equipment:

- **Verify the system configuration of the controller**
- **Test alarm operability and battery backup (unless records are electronically uploaded and stored in a remote file)**
- **Inspect sensors for residual build-up**
- **Ensure sensor communication with controller**
- **Keep records of these tests for three years**

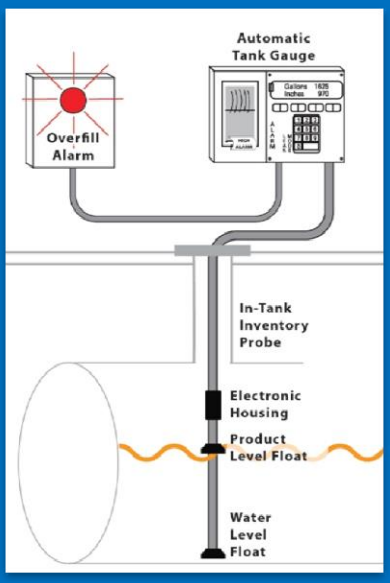
These activities must be performed according to manufacturer's requirements; a nationally recognized code of practice; or other method approved by the department.

An unexplained presence of liquid in the interstitial space of tanks, piping or in a containment sump is considered an unusual operating condition, except if the liquid in the interstitial space is used as part of the interstitial monitoring method (for example brine). If you find liquid in the interstitial space of secondarily contained systems, you must investigate, remove the liquid and correct the source of the liquid.

You must investigate and remove any liquid in the interstitial space of secondarily contained systems, unless the liquid is part of the release detection method.

Automatic Tank Gauging Systems

In an ATG system, a probe permanently installed in the tank is connected to a monitor to provide information on product level and temperature. These systems calculate changes in product volume that can indicate a leaking tank. ATG systems operate in one of two modes: inventory mode and leak detection mode. In the leak detection mode, ATG systems can be set to perform a leak test on either a periodic basis or continuous basis. Leak tests set to run on a periodic basis are referred to as in-tank static tests and require the tank system to be idle typically for between one to six hours. Leak testing set to run on a continuous basis is referred to as continuous in-tank leak detection and operates on an uninterrupted or nearly uninterrupted manner.



ATG system

Will You Be In Compliance?

When installed and operated according to the manufacturer's specifications, ATG systems meet the federal release detection requirements for tanks installed before July 1, 2017. A leak test performed at least every 30 days is required for the tank. This method does not detect piping leaks. For piping, see release detection requirements for piping on pages 30-33.

How Does the Release Detection Method Work?

In the inventory mode:

- The product level and temperature in a tank are measured and recorded by a computer.
- ATG systems replace the use of the gauge stick to measure product level and perform inventory control. This mode records the activities of an in-service tank, including deliveries.

UPDATED

In the leak detection mode for in-tank static testing:

- **Fuel is not dispensed, deliveries are not made and the product level and temperature are measured for at least one hour.**

In the leak detection mode, ATG systems can be set to perform one of the following:

- **periodic leak test, also known as an in-tank static test**
- **continuous leak test, also known as continuous in-tank leak detection**

Note: When referring to ATG systems in this booklet, it means a system performing in-tank static testing or continuous automatic tank gauging (i.e., SCALD or CSLD testing). See continuous in-tank leak detection on pages 14-15 for ATG systems used in conjunction with a continual evaluation.

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In the leak detection mode for continuous in-tank leak detection:

- **Some systems, known as continuous ATG systems, do not require the tank be taken out of service to perform a test. This is because these systems can gather and analyze data during many short periods when no product is being added to or taken from the tank.**
- **Other systems combine aspects of automatic tank gauges with statistical inventory reconciliation.**

Note: Both of these methods fall under continuous in-tank leak detection because they operate on an uninterrupted basis or pause for milliseconds to gather and record data for continual analysis of the tank's leak status. See pages 14-15 for more information about these methods.

"Continuous" ATG is often used at busier sites with little idle time. This is also known as CSLD (continuous statistical leak detection) or SCALD (statistical continuous automatic leak detection).

What Are the Regulatory Requirements?

ATG systems must be able to detect a leak of at least 0.2 gallon per hour with a probability of detection of at least 95 percent and a probability of false alarm of no more than five percent. Some ATG systems can also detect a leak of 0.1 gallon per hour with the probabilities listed above.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly:

- **Verify the system configuration**
- **Test alarm operability**
- **Check the battery backup, unless data is uploaded and stored at a secondary location**
- **Inspect probes and sensors for residual build-up**
- **Ensure floats move freely, the shaft is not damaged and cables are free of kinks and breaks**
- **Keep records of these tests for three years**

You must obtain a conclusive pass or fail result within the 30-day monitoring period. If the test report is inconclusive, you must use another method of release detection for that 30-day monitoring period. An inconclusive result means you have not performed release detection for that 30-day period.

These activities must be performed according to manufacturer's requirements; a nationally recognized code of practice; or other method approved by the department and must be conducted by a certified or trained technician, as required by the manufacturer.

Anything Else You Should Consider?

Detecting water in the tank is important. Water around a tank may mask a hole in the tank or distort the data to be analyzed by temporarily preventing a release. To detect a release in this situation, check for water at least once a month.

UPDATED

Depending on the product in the tank, detecting water may be difficult, but it is possible to do. Products such as ethanol-based fuels may not form a water bottom.

With the exception of some continuous ATG systems evaluated to perform on manifolded tanks, each tank at a site must be equipped with a separate probe. Check the NWGLDE listing to determine if the ATG system can be used with manifolded tanks. For more information, see continuous in-tank leak detection requirements on pages 14-15. The ATG system probe is connected to a console that displays product level information and the results of the monthly test.

ATG systems are often equipped with alarms for high and low product level and high water level.

For ATG systems used for static release detection testing, no product can be delivered to the tank or withdrawn from it during the test, which generally takes one to six hours. These times vary depending on the specific ATG system model. You may also find information on your ATG system on NWGLDE's list of release detection evaluations at: nwglde.org.

An ATG system can and should be programmed to perform a test more often than once every 30 days.

Some ATG systems may be evaluated to test at relatively low capacities, for example, 25 or 30 percent. Although the product level at such capacities may be valid for the test equipment, it may not test all portions of the tank that routinely contain product. The ATG leak test must be run and tank tested at the capacity to which it is routinely filled.

The ATG system probe is installed through an opening, which is different than the fill pipe, on the top of the tank.

An unexplained presence of water in the tank is considered an unusual operating condition. If you find water in your tank, you must investigate and correct the source of the water. Suspected releases must be reported to the department within 24 hours.

ATG systems can be linked with computers at remote locations, from which the system can be programmed or read.

Continuous In-Tank Leak Detection

UPDATED

The 2015 federal UST regulation added continuous in-tank leak detection (CITLD) as a release detection method and establishes requirements for its operation and maintenance. CITLD encompasses all statistically based methods where the system incrementally gathers measurements on an uninterrupted or nearly uninterrupted basis to determine a tank's leak status.

Will You Be In Compliance?

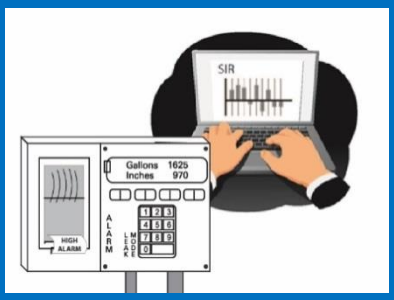
You can use CITLD methods for tanks installed before July 1, 2017. The system incrementally gathers measurements to determine a tank's leak status within the 30-day monitoring period. Some methods address pipelines and have been verified to meet pipeline performance standards. These methods are capable of meeting the pipeline release detection requirements. See release detection requirements for piping on pages 30-33.

How Does the Release Detection Method Work?

There are two major groups that fit into this category: continuous statistical release detection, also referred to as continuous automatic tank gauging methods, and continual reconciliation. Both groups typically use sensors permanently installed in the tank to obtain inventory measurements. They are combined with a microprocessor in the ATG system or other control console that processes the data. Continual reconciliation methods are further distinguished by their connection to dispensing meters that allow for automatic recording and use of dispensing data in analyzing tanks' leak status.

What Are the Regulatory Requirements?

CITLD operates on an uninterrupted basis or operates by allowing the system to gather incremental measurements to determine the release status of the tank at least once every 30 days.



Continuous in-tank leak detection

You must obtain a conclusive pass or fail result within the 30-day monitoring period. If the test report is inconclusive, you must use another method of release detection for that 30-day monitoring period. An inconclusive result means you have not performed release detection for that 30-day period.

CITLD must be able to detect a leak at least 0.2 gallon per hour with a probability of detection of at least 95 percent and a probability of false alarm of no more than five percent. Some CITLD methods can also detect a leak of 0.1 gallon per hour with the probabilities listed above.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly:

- **Verify the system configuration of the controller**
- **Test alarm operability and battery backup**
- **Inspect probes and sensors for residual build-up**
- **Ensure floats move freely, the shaft is not damaged and cables are free of kinks and breaks**
- **Keep records of these tests for three years**

These activities must be performed according to manufacturer's instructions; a nationally recognized code of practice; or other method approved by the department.

An unexplained presence of water in the tank is considered an unusual operating condition. If you find water in your tank you must investigate and correct the source of the water. Suspected releases must be reported to the department within 24 hours.

Anything Else You Should Consider?

Detecting water in the tank is important. Water around a tank may mask a hole in the tank or distort the data to be analyzed by temporarily preventing a release. To detect a release in this situation, check for water at least once a month. **Depending on the product in the tank, detecting water may be difficult, but it is possible to do. Products such as ethanol-based fuels may not form a water bottom.**

UPDATED

See NWGLDE at: nwglde.org, which is a source for checking whether your CITLD method meets regulatory performance requirements.

Suspected releases must be reported to the department within 24 hours. Releases to the environment (or after-hours reporting of suspected releases) must be reported to the department's Environmental Emergency Response 24-hour call center: 573-635-2436

CITLD methods may allow for monitoring larger tank capacities and higher system throughputs. However, these methods have limitations as well.

Statistical Inventory Reconciliation

The 2015 federal UST regulation added statistical inventory reconciliation (SIR) as a release detection method. While Missouri included SIR originally in the 2011 rule updates, this method was revised in 2017 to include the new federal requirements. For this method, a trained professional uses sophisticated computer software to conduct a statistical analysis of inventory, delivery and dispensing data, which is gathered periodically and supplied regularly to the vendor.

Will You Be In Compliance?

SIR, when performed according to the vendor's specifications and NWGLDE listing, meets state release detection requirements for USTs and piping installed before July 1, 2017. SIR with a 0.2 gallon per hour release detection capability meets the requirements for monthly monitoring for tanks. See release detection requirements for piping on pages 30-33.

How Does the Release Detection Method Work?

SIR analyzes inventory, delivery and dispensing data collected over a period of time to determine whether or not a tank or piping is leaking a regulated substance.

Each operating day, the product level is measured using a gauge stick or other tank level monitor. You must also keep complete records of all withdrawals from the UST and all deliveries to the UST. After data has been collected for the period of time required by the SIR vendor, you provide the data to the SIR vendor.

The SIR vendor conducts a statistical analysis of the data to determine whether or not your UST system is leaking. The SIR vendor provides you with a test report of the analysis. Alternatively, you can purchase SIR software, which performs this same analysis and provides a test report from your own computer.

You must obtain a conclusive pass or fail result for the 30-day monitoring period. If the test report is inconclusive, you may be asked to use another method of release detection for that 30-day monitoring period or determine the source of the inconclusive result.

Some methods combine aspects of ATGs with statistical inventory reconciliation. In these methods, sometimes called hybrid methods, a gauge provides liquid level and temperature data to a computer running SIR software, which performs the analysis to detect leaks.

SIR methods are distinguished from continuous in-tank leak detection methods by how inventory, delivery and dispensing data are processed; they provide a determination of the release status of the tank or piping. SIR data is processed on a periodic basis involving a separate analysis that is performed either by a SIR vendor or SIR software. Continuous statistically based in-tank release detection methods process data on an ongoing, uninterrupted or nearly uninterrupted manner.

What Are the Regulatory Requirements?

SIR methods must report a quantitative result with a calculated leak rate, be able to detect a leak at least 0.2 gallons per hour. Some SIR methods can also detect a leak of 0.1 gallons per hour.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly:

For hand held non-electronic equipment, such as tank gauge sticks:

- **Check for operability and serviceability**
- **Keep walkthrough inspection records for one year**

For other equipment:

- **Verify the system configuration of the controller**
- **Inspect probes and sensors for residual build-up**
- **Ensure floats move freely, the shaft is not damaged and cables are free of kinks and breaks**
- **Keep records of these tests for three years**

These activities must be performed according to manufacturer's instructions; a nationally recognized code of practice; or requirements determined by your implementing agency to be as protective of human health and the environment.

EPA's Introduction To Statistical Inventory Reconciliation For Underground Storage Tanks at: *epa.gov/ust/introduction-statistical-inventory-reconciliation-underground-storage-tanks* explains how to do statistical inventory reconciliation.

You must receive your SIR report by the 10th of the following month (July's SIR report must be completed and returned to the owner/operator by August 10.)

UPDATED

The SIR method must use a threshold that does not exceed one-half the minimum detectable leak rate (MDL).

Summary of test results from monthly SIR reports. Complete for all 12 months.

Compliance Month/Year		Leak Threshold	Minimum Detectable Leak	Calculated Leak Rate
		gph	gph	gph
Oct	2015	0.10	0.15	-0.08
Nov	2015	0.10	0.19	-0.09
Dec	2015	0.10	0.17	-0.08
Jan	2016	0.10	0.14	-0.08
Feb	2016	0.10	0.10	-0.09
Mar	2016	0.10	0.18	-0.09
Apr	2016	0.10	0.16	-0.08
May	2016	0.10	0.16	-0.09
Jun	2016	0.10	0.18	-0.08
Jul	2016	0.10	0.18	-0.09
Aug	2016	0.10	0.05	0.01
Sep	2016	0.10	0.18	-0.08

Under these rules, the months marked in red would not pass. The calculated leak rate is more than one-half of the minimum detectable leak rate.

You must keep the test reports on file for one year.

An unexplained presence of water in the tank is considered an unusual operating condition. If you find water in your tank you must investigate and correct the source of the water. Suspected releases must be reported to the department within 24 hours.

Anything Else You Should Consider?

Detecting water in the tank is important. Water around a tank may mask a hole in the tank or distort the data to be analyzed by temporarily preventing a release. To detect a release in this situation, check for water at least once a month. **Depending on the product in the tank, detecting water may be difficult, but it is possible to do. Products such as ethanol-based fuels may not form a water bottom.**

UPDATED

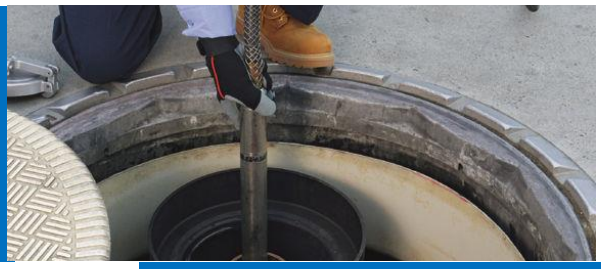
A SIR method's ability to detect releases declines as throughput increases. If you are considering using a SIR method for high throughput UST systems, check the method's documentation to confirm that it will meet regulatory requirements and your needs.

Documentation on the method's capability of meeting performance requirements must reflect the way the method is used in the field.

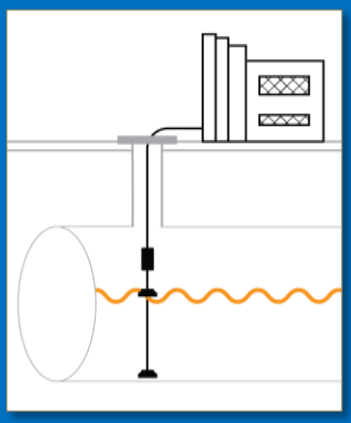
Data, including product level measurements, dispensing data, and delivery data, should all be carefully collected. Poor data collection can produce inconclusive results and noncompliance.

The SIR vendor will generally provide forms for recording data, a calibrated chart converting liquid level to volume, and detailed instructions on conducting measurements.

Tank Tightness Testing With Inventory Control



This method combines periodic tank tightness testing with monthly inventory control. Inventory control involves taking measurements of tank contents and recording amount received and pumped each operating day, as well as reconciling all this data at least once every 30 days. Every five years, this combined method must also include a tightness test, which is a sophisticated test performed by a trained professional.



Tank tightness testing

Will You Be In Compliance?

When performed according to the manufacturer's specifications and NWGLDE listing, periodic tank tightness testing combined with monthly inventory control can temporarily meet the federal release detection requirements for tanks installed before July 1, 2017. This method does not detect piping leaks. This combined method can be used only for 10 years after the tank was installed.

These two release detection methods must be used together because inventory control alone does not meet the federal requirements for monthly release detection for tanks. Line tightness testing, a separate type of tightness testing, is also an option for underground piping; see release detection requirements for piping on pages 30-33.

Both tank tightness testing and inventory control are discussed below. Tank tightness testing is discussed first, followed by inventory control. Tank tightness testing is also used in combination with manual tank gauging as described on pages 23-25. In addition, tank tightness testing may be used to investigate a suspected release.

Tank Tightness Testing

How Does the Release Detection Method Work?

Tightness tests, also referred to as precision tank tests, include a variety of methods. These methods are divided into two categories: volumetric and nonvolumetric.

Volumetric test methods generally involve precisely measuring in milliliters or thousandths of an inch the change in product level in a tank over time. Additional characteristics of this category of tank tightness testing include:

- Changes in product temperature also must be precisely measured in thousandths of a degree at the same time as level measurements, because temperature changes cause volume changes that interfere with finding a leak.
- The product in the tank must be at a certain minimum level before testing. This often requires adding product from another tank on site or purchasing additional product.
- A net decrease in product volume, which you find by subtracting out volume changes caused by temperature, over the time of the test indicates a leak.
- A few of these methods measure properties of product that are independent of temperature, such as mass, and so do not need to measure product temperature.

There are many nonvolumetric test methods. These methods can be distinguished by what they test or which areas of the UST system they test. The methods:

- Involve acoustics that interpret an ultrasonic signal.
- Use vacuum or pressure decay with gain or loss of pressure, respectively, to determine whether there is a hole in the tank.
- Test either the wetted portion of the tank, the part of the tank containing product, or the ullage, which is the unfilled portion of the tank.
- Involve tracer compounds circulated through the UST system, which test strategically placed sampling ports outside the UST system.

Except for tracer compounds used for both volumetric and nonvolumetric test methods, the following generally apply:

- The testing equipment is temporarily installed in the tank, usually through the fill pipe.
- The tank must be taken out of service for the test.
- Some tightness test methods require the tester measure and calculate by hand. Other tightness test methods are highly automated. After the tester sets up the equipment, a computer controls the measurements and analysis.

Although not typically done, you may use tank tightness testing to meet the monthly release detection requirement. This test must meet performance standards of 0.1 gallon per hour leak rate with probability of detection at least 95 percent and probability of false alarm not to exceed five percent.

Tank tightness tests are often used as part of an investigation into a suspected release. This method is more precise than traditional method and involves trained technicians performing the tests and interpreting the results.

Anything Else You Should Consider?

For most methods, a testing company performs the test. You should observe the test.

Depending on the method, tank tightness testing can be used on tanks of varying capacity and tanks containing gasoline and diesel. Many test methods have limitations that should not be exceeded on the capacity of the tank or the amount of ullage, which is the unwetted portion of the tank. If you are considering using tightness testing for products other than gasoline or diesel, discuss the method's applicability with the manufacturer's representative.

Some test methods require measuring an ingress of water. Please note, higher ethanol concentrations may mask water ingress. Also, if the test is attempting to determine the source of a leak and product is already in the tank pit around the outside of the tank, you will need to ensure that the tester is checking for any liquid ingress, not just water ingress.

Procedure and personnel, not equipment, are usually the most important factors in a successful tightness test. Therefore, well-trained and experienced testers are very important. Many test equipment manufacturers have tester certification programs. If the manufacturer requires all testers to be certified, the tester you choose must meet the manufacturer's requirements.

Under the UST regulation, this combination method can only be used for 10 years after the tank was installed, if the tank was installed before July 1, 2017.

Manifolded tanks generally should be isolated and tested separately.

Review the NWGLDE listing for limitations on your tank tightness test method to confirm it is appropriate for your tank system.

Inventory Control
How Does the Release Detection Method Work?

Inventory control requires frequent measurements of tank contents and math calculations that let you compare your stick inventory, which is what you measured, to your book inventory, which is what your recordkeeping indicates you should have. If the difference between your stick and book inventory is too large, your tank may be leaking.

UST inventories are determined each operating day by using a gauge stick and recording the data on a form. The level on the gauge stick is converted to a volume of product in the tank using a calibration chart, which is often furnished by the UST manufacturer.

The amounts of product delivered to and withdrawn from the UST each operating day are also recorded. At least once every 30 days, the gauge stick data and the sales and delivery data are reconciled and the month's overage or

shortage is determined. If the overage or shortage is greater than or equal to one percent of the tank's flow-through volume plus 130 gallons of product, the UST may be leaking.

Anything Else You Should Consider?

Detecting water in the tank is important. Water around a tank may mask a hole in the tank or distort the data to be analyzed by temporarily preventing a release. To detect a release in this situation, check for water at least once a month. **Depending on the product in the tank, detecting water may be difficult, but it is possible to do. Products such as ethanol-based fuels may not form a water bottom.**

UPDATED

An unexplained presence of water in the tank is considered an unusual operating condition. If you find water in your tank you must investigate and correct the source of the water. Suspected releases must be reported to the department within 24 hours.

What Are the Regulatory Requirements?

The tightness test method must be able to detect a leak at least 0.1 gallon per hour and be NWGLDE-listed. With inventory control, you must perform a tightness test at least every five years.

Inventory control with tank tightness testing can only be used for up to 10 years after the tank was installed. This method may not be used for UST systems installed on or after July 1, 2017.

The gauge stick must reach the bottom of the tank and be marked so that the product level can be determined to the nearest one-eighth of an inch. A monthly measurement must be taken to identify any water in the tank.

Product dispensers must be calibrated to the applicable weights and measures standards.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly.

For hand held non-electronic equipment, such as tank gauge sticks:

- **Check for operability and serviceability**
- **Keep walkthrough inspection records for one year**

EPA's Doing Inventory Control Right at: epa.gov/ust/doing-inventory-control-right-underground-storage-tanks explains how to do inventory control. The booklet also contains standard recordkeeping forms.

You may need to get a corrected tank chart if your tank is not level.

The accuracy of tank gauging can be increased by spreading product-finding paste on the gauge stick before taking measurements or by using in-tank product level monitoring devices.

Manual Tank Gauging

Manual tank gauging requires keeping the tank undisturbed for at least 36-58 hours each week, during which the contents of the tank are measured twice at the beginning and twice at the end of the test period. At the end of each week, you compare the results to the standards shown on page 24 to see if your tank is leaking.

Will You Be In Compliance?

Manual tank gauging can be used only on tanks containing 2,000 gallons or less. Tanks containing 1,000 gallons or less can use this method alone, if they meet specified diameter requirements discussed below. Tanks from 1,001 to 2,000 gallons, and tanks between 551 and 1,000 gallons that do not meet the specified diameters, can use manual tank gauging when it is combined with tank tightness testing.

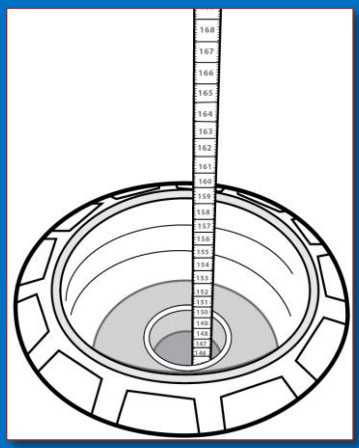
Manual tank gauging detects leaks only from tanks; this method does not detect piping leaks. For requirements for piping, see release detection requirements for piping on pages 30-33.

How Does The Release Detection Method Work?

You must take four measurements of the tank's contents, two at the beginning and two at the end of a 36-58 hour period, during which nothing is added to or removed from the tank.

The average of the two consecutive ending measurements are subtracted from the average of the two beginning measurements to indicate the change in product volume.

Every week, you compare the calculated change in tank volume to the standards shown in the table on page 24. If the calculated change exceeds the weekly standard, the UST may be leaking. Also, you must compare the averages of the four weekly test results to the monthly standard in the same way. See the table on the next page.



Manual tank gauging

EPA's *Manual Tank Gauging For Small Underground Storage Tanks* at epa.gov/ust/manual-tank-gauging-small-underground-storage-tanks explains how to do manual tank gauging correctly and contains standard recordkeeping forms.

What Are The Regulatory Requirements?

You must take liquid level measurements with a gauge stick that is marked to measure the liquid to the nearest one-eighth of an inch.

UPDATED

By Jan. 1, 2020, you must begin performing the following on your release detection equipment annually to make sure it is working properly.

For hand held non-electronic equipment, such as tank gauge sticks:

- **Check for operability and serviceability**
- **Keep walkthrough inspection records for one year**

You must perform these activities according to manufacturer's instructions; a nationally recognized code of practice; or another method approved by the department.

Manual tank gauging may be used as the sole method of release detection for tanks with a capacity of 550 gallons or less and capacities between 551 and 1,000 gallons with a 48 inch or 64 inch diameter. All other tanks using manual tank gauging must combine the method with tank tightness testing.

Table of Test Standards for Manual Tank Gauging

Tank Size	Minimum Duration of Test	Weekly Standard (one test)	Monthly Standard (four-test average)
Up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when tank diameter is 64″)	44 hours	9 gallons	4 gallons
551-1,000 gallons (when tank diameter is 48″)	58 hours	12 gallons	6 gallons
551-1,000 gallons (also requires periodic tank tightness testing)	36 hours	13 gallons	7 gallons
1,001-2,000 gallons (also requires periodic tank tightness testing)	36 hours	26 gallons	13 gallons

An unexplained presence of water in the tank is considered an unusual operating condition. If you find water in your tank, you must investigate and correct the source of the water. You must report suspected releases to your implementing agency within 24 hours or the period specified by your implementing agency.

To accurately measure your tank, you can use an electronic gauge, a permanently installed mechanical gauge or use a measuring stick. Measuring sticks must be in good condition, so that readings can be taken to the nearest one-eighth of an inch.

Manual tank gauging requires idle time. If the tank system is constantly in use, another release detection method will be needed.

Anything Else You Should Consider?

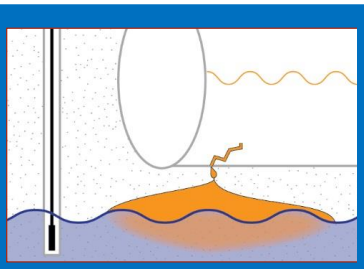
Detecting water in the tank is important. Water around a tank may mask a hole in the tank or distort the data to be analyzed by temporarily preventing a release. To detect a release in this situation, check for water at least once a month. **Depending on the product in the tank, detecting water may be difficult, but it is possible to do. Products such as ethanol-based fuels may not form a water bottom.**

UPDATED

You can perform manual tank gauging yourself. Correct gauging, recording, and correct math are the most important factors for successful tank gauging. The accuracy of manual tank gauging can be increased by spreading product-finding paste on the gauge stick before taking measurements.

Groundwater Monitoring

Groundwater monitoring detects the presence of liquid product floating on the groundwater near the tank and along the piping runs. To discover if released product has reached groundwater, these wells can be checked periodically using hand-held equipment or continuously with permanently installed equipment.



Groundwater monitoring

Will You Be In Compliance?

When installed and operated according to the manufacturer's instructions, a groundwater monitoring system can meet the release detection requirements for USTs and piping installed before Jan. 1, 2020. Monitoring of a groundwater monitoring system is required at least once every 30 days for the tank.

UPDATED

No later than July 1, 2020, if you use groundwater monitoring, you must change release detection methods. Groundwater monitoring will no longer be accepted for release detection after July 1, 2020.

How Does the Release Detection Method Work?

Groundwater monitoring involves the use of permanent monitoring wells placed close to the UST, with the wells extending below the groundwater level. The wells are checked at least every 30 days for the presence of product that has leaked from the UST and is floating on the groundwater.

The two main components of a groundwater monitoring system are the monitoring wells, which are typically at least four inches in diameter, and the monitoring device.

Electronic detection devices may be permanently installed in the well for automatic, continuous measurements for released product.

Manual devices range from a bailer, which collects a liquid sample for visual inspection, to a device that can be inserted into the well to electronically indicate the presence of leaked product. Manual devices must be used to check each monitoring well at least once every 30 days.

Before installation, a site assessment is necessary to determine the soil type, groundwater depth and flow direction, and the general geology of the site. A trained professional must perform this assessment.

The number of wells and their placement is very important. Only an experienced contractor can properly design and construct an effective monitoring well system. A minimum of two wells is recommended for a single tank excavation. Three or more wells are recommended for an excavation with two or more tanks.

What Are the Regulatory Requirements?

Groundwater monitoring can only be used if the stored substance does not mix with water and floats on top of water.

If groundwater monitoring is used as the sole method of release detection, the groundwater must be less than 20 feet below the surface, and the soil between the well and the UST must be sand, gravel, or other coarse materials.

Product detection devices must be able to detect one-eighth inch or less of leaked product on top of the groundwater.

Monitoring wells must be properly designed and sealed to keep them from becoming contaminated from outside sources.

Wells should be placed in the UST backfill so they can detect a leak as quickly as possible.

Monitoring wells must be secured and clearly marked.

UPDATED

Anything Else You Should Consider?

In general, groundwater monitoring works best at UST sites where:

- Monitoring wells are installed in the tank backfill
- There are no previous releases of product that would falsely indicate a current release

A professionally conducted site assessment is critical for determining these site-specific conditions.

UPDATED

In the event of a confirmed release at an UST site, groundwater monitoring is no longer acceptable to meet the release detection requirement unless the site is remediated and a new site assessment is conducted.

No later than July 1, 2020, if you use vapor monitoring or groundwater monitoring, you must change release detection methods.

Vapor monitoring may continue to be used only if used in conjunction with an added chemical marker and the method is NWGLDE listed as a tank tightness test.

Groundwater, at times, may be more than 20 feet from the ground surface, due to seasonal water table variations. This can result in the depth to groundwater requirement not being met.

Vapor Monitoring

Vapor monitoring measures either product vapors in the soil around the UST, referred to as passive monitoring, or special tracer chemicals added to the UST, referred to as active monitoring.

Will You Be In Compliance?

When installed and operated according to the manufacturer's instructions, vapor monitoring can meet the federal release detection requirements for tanks and piping installed before July 1, 2017. Monitoring of a vapor monitoring system at least every 30 days is required for the tank.

UPDATED

No later than July 1, 2020, if you use vapor monitoring you must change release detection methods. Vapor monitoring will no longer be a valid release detection method, unless it is used in conjunction with an added chemical marker and is NWGLDE-listed as a tank tightness test.

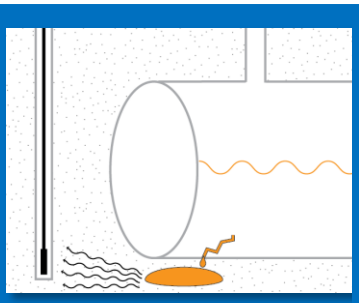
How Does the Release Detection Method Work?

Vapor monitoring detects or measures vapors from released product (or a released added "marker" chemical) within monitoring wells placed in the soil around the tank to determine if the tank is releasing regulated substances.

Vapor monitoring requires the installation of monitoring wells or sampling points strategically placed in the tank backfill or along pipe runs.

Vapor monitoring systems range from equipment that immediately analyzes a gathered vapor sample to devices that gather a sample, which must be sent to a laboratory for analysis. They must be used at least once every 30 days to monitor a site.

Before installation of any vapor monitoring system for release detection, a site assessment is necessary to determine the soil type, groundwater depth and flow direction, and the general geology of the site. Only a trained professional can do this.



Vapor monitoring

To ensure they are properly operating, vapor monitoring devices must be periodically calibrated according to the manufacturer's instructions.

The number of wells and their placement is very important. Only an experienced contractor can properly design and construct an effective monitoring well system. Vapor monitoring requires installation of monitoring wells within the tank backfill. A minimum of two wells is recommended for a single tank excavation. Three or more wells are recommended for an excavation with two or more tanks.

What Are the Regulatory Requirements?

The UST backfill must be sand, gravel or another material that will allow petroleum vapors or tracer compound to easily move to the monitor.

The backfill must be clean enough that previous contamination does not interfere with detecting a current release.

For traditional vapor monitoring, the substance stored in the UST must vaporize easily so that the vapor monitor can detect a release. For example, some vapor monitoring systems do not work well, if at all, with diesel fuel.

High groundwater, excessive rain, or other sources of moisture must not interfere with operation of vapor monitoring for more than 30 consecutive days.

Monitoring wells must be secured and clearly marked.

Anything Else You Should Consider?

Before installing a vapor monitoring system, a site assessment must be done to determine whether vapor monitoring is appropriate at the site. A site assessment usually includes at least a determination of the groundwater level, background contamination, stored product type and soil type. This assessment can only be done by a trained professional.

UPDATED

In the event of a confirmed release at an UST site, vapor monitoring is no longer acceptable to meet the release detection requirement unless the site is remediated and a new site assessment is conducted.

No later than July 1, 2020, if you use vapor monitoring or groundwater monitoring, you must change release detection methods.

Vapor monitoring may continue to be used only if used in conjunction with an added chemical marker and the method is NWGLDE listed as a tank tightness test.

Release Detection For Underground Piping

Owners and operators of federally regulated UST systems must have a release detection method, or combination of methods, for connected underground piping that routinely contains product.

Will You Be In Compliance?

When installed and operated according to the manufacturer's specifications, the release detection methods discussed here meet the federal regulatory requirements for underground piping systems. Your UST may have suction or pressurized piping, which are discussed below.

UPDATED

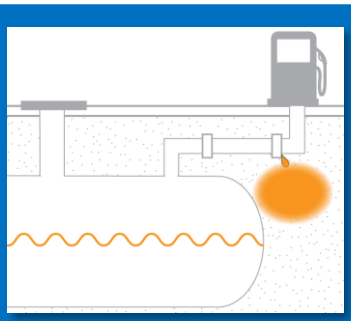
Piping installed or replaced on or after July 1, 2017, must be double-walled, open to leak-tight containment sumps with interstitial monitoring, except for suction piping that meets the requirements discussed below. In addition, pressurized piping must have an automatic line leak detector.

What Are the Regulatory Requirements for Suction Piping?

No release detection is required if the suction piping system has these characteristics: below-grade piping that operates under atmospheric pressure; enough slope so that the product in the pipe can drain back into the tank when suction is released; and only one check valve, which is located as close as possible beneath the pump in the dispensing unit. If a suction line is to be considered exempt ("safe suction") based on these characteristics, there must be some way to verify that the line actually has these characteristics.

"Unsafe" suction piping installed before July 1, 2017 that does not have all of the characteristics noted above must use one of the following release detection methods:

- A line tightness test at least every three years
- Monthly interstitial monitoring
- Monthly vapor monitoring (until July 1, 2020)
- Monthly groundwater monitoring (until July 1, 2020)
- Monthly statistical inventory reconciliation



Line leak detection

Sites may use mechanical or electronic line leak detectors, but must ensure the device is appropriate for the system and will detect a release as installed.

- Continuous in-tank leak detection only for methods that include pipelines
- Other monthly monitoring approved by the department

Suction lines are not pressurized very much during a tightness test of seven to 15 pounds per square inch.

Interstitial monitoring, vapor monitoring, groundwater monitoring, continuous in-tank leak detection and statistical inventory reconciliation have the same regulatory requirements for piping as they do for tanks. See earlier sections of this booklet for information on those methods.

UPDATED

Unsafe suction piping installed or replaced on or after July 1, 2017, that does not meet all of the design standards above must be double-walled, equipped with containment sumps and use interstitial monitoring.

What Are the Regulatory Requirements for Pressurized Piping?

Pressurized piping installed before July 1, 2017, must have an automatic line leak detector (ALLD) that does one of the following:

- Shuts off flow
- Restricts flow
- Triggers an audible or visual alarm (not recommended)

The ALLD must be designed to detect a gross line failure, a release of least three gallons per hour at a line pressure of 10 pounds per square inch within one hour, with a probability of detection of at least 95 percent and a probability of false alarm of no more than five percent.

You must also use one of these other precision methods:

- Annual line tightness test
- Monthly interstitial monitoring
- Monthly vapor monitoring
- Monthly groundwater monitoring
- Monthly statistical inventory reconciliation

UPDATED

- **Continuous in-tank leak detection, only for methods that include pipelines**
- Other monthly monitoring that meets performance standards or approved by your implementing agency

The line tightness test must be able to detect a leak at least 0.1 gallon per hour with a probability of detection of at least

Pay special attention to manifolded piping leak detection systems. Systems may not run at the same time, solenoid valves may impact leak detection on the entire line, and/or other equipment may be installed or need to be installed to properly monitor the lines.

95 percent and a probability of false alarm of no more than five percent when the line pressure is one and a half times its normal operating pressure. The test must be conducted each year. If the test is performed at pressures lower than one and a half times operating pressure, the leak rate to be detected must be correspondingly lower.

Interstitial monitoring; vapor monitoring; groundwater monitoring; continuous in-tank leak detection only for methods that include piping; and statistical inventory reconciliation have the same regulatory requirements for piping as for tanks. See earlier sections of this booklet for information on those methods.

UPDATED

Pressurized piping installed or replaced on or after July 1, 2017, must be double-walled, equipped with containment sumps and use interstitial monitoring.

You must perform annual operability testing of ALLDs to determine they are capable of detecting a leak of three gallons per hour at 10 pounds per square inch line pressure within one hour by simulating a leak at or below this leak rate. This operability test must include a simulated leak and the report must document the test method, technician and technician's certification, if required by the LLD manufacturer. You must keep records of these tests until the next test is performed.

The test must be performed according to manufacturer's instructions or another method approved by the department.

How Do the Release Detection Methods Work? ALLDs

Line leak detectors can monitor the pressure within the line in a variety of ways: whether the pressure decreases over time; how long it takes for a line to reach operating pressure; and combinations of increases and decreases in pressure.

If a suspected release is detected, the LLD can reduce the flow rate, cut off product flow in the line or shut down the pump. LLDs are permanently installed directly into the pipe or the pump housing.

All mechanical and electronic ALLDs must meet the annual testing requirement.

The department allows an ALLD to meet other aspects of the pressurized piping dual release detection requirement (that is, monthly monitoring or line tightness testing). If you are using this method, the annual operability test must be conducted to ensure the applicable performance standard can be met. Simulating a leak at 0.2 gph for monthly monitoring or 0.1 gph for line tightness testing is one way to ensure this.

UPDATED

Interstitial Monitoring on Piping

A piping interstitial monitoring system must be the precision monitoring method for piping installed or replaced on or after July 1, 2017. It may be used on piping installed prior to July 1, 2017, as well. It is combined with an ALLD for gross line monitoring. Interstitial monitoring systems must include the following:

- **Sump sensors used for piping interstitial monitoring must remain as close as practicable to the bottom of interstitial spaces being monitored**
- **Monthly monitoring records must be maintained for at least one year**
- **Electronic and mechanical components of the system, including shutoff devices, sensors, pressure or vacuum monitors, must be tested annually for proper operation**
- **Containment sumps that are part of the piping interstitial monitoring system must be tested at least once every three years for liquid tightness or have annual monitoring on the interstice (space between the two walls) of a double-walled containment sump**

A self-diagnostic system does not meet the annual testing requirement, unless the system performs a simulated leak test.

For systems installed after July 1, 2017, sensors should be installed in all containment sumps. If sensors are not installed in each sump, all connected sumps must be tested together (including the secondary of the piping connecting the sumps.)

Line Tightness Testing

During a line tightness test, the line is taken out of service and usually pressurized above the normal operating pressure. A drop in pressure over time, usually an hour or more, suggests a possible leak. Suction lines are not pressurized very much during a tightness test.

Most line tightness tests are performed by a testing company. You should observe the test. Some tank tightness test methods can be performed to include a tightness test of the connected piping. For most line tightness tests, no permanent equipment is installed.

In the event of trapped vapor pockets, it may be impossible to conduct a valid line tightness test. There is no way to tell definitely before the test begins if this will be a problem, but long complicated piping runs with many risers and dead ends are more likely to have vapor pockets.

Some permanently installed electronic systems, which often include electronic line leak detectors connected to an ATG system, may meet the requirements of monthly monitoring or a line tightness test.

Links For More Information

Department of Natural Resources Links

- Missouri Department of Natural Resources: dnr.mo.gov
- Tanks Compliance and Technology Unit: dnr.mo.gov/env/hwp/tanks/enfcomp.htm
  573-522-5665
- Tanks Section Closure Unit: dnr.mo.gov/env/hwp/tanks/ustclosure.htm
  573-751-6822
- Tanks Section Remediation Unit: dnr.mo.gov/env/hwp/tanks/ustleaking.htm
  573-751-6822
- Budget and Planning (Fees, Registration and Administrative Issues): dnr.mo.gov/env/hwp/tanks/ustregis.htm
  573-522-3099
- Vapor Recovery Information: dnr.mo.gov/env/apcp/vaporrecovery/index.html
  573-751-4817

Other Government Links

- Missouri Department of Agriculture Petroleum/Propane/Anhydrous Ammonia Program: agriculture.mo.gov/weights/petroleum/
  573-751-5635
- Missouri Petroleum Storage Tank Insurance Fund: pstif.org/
  800-765-2765
- EPA's Office of Underground Storage Tanks: epa.gov/ust
- EPA's UST compliance assistance: epa.gov/ust/resources-owners-and-operators

You may email questions to: tanks-compliance @dnr.mo.gov

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